HEWLETT®
PACKARD

HP Fast*RAID*

Installation and Configuration Guide

Notice

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HP FastRAID Installation and Configuration Guide

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HP Fast*RAID*

Installation and Configuration Guide

Introduction

HP Fast*RAID* uses RAID technology to accelerate the performance of your PC's hard drives. Rather than focusing on data protection, as with server-based RAID technologies, HP Fast*RAID* brings top performance to your computer.

With HP Fast*RAID* Pre-Installed on Your PC Workstation

With HP Fast*RAID* already installed on your PC Workstation, you will receive the following components:

- Windows NT installation CD-ROM & 3 Setup diskettes,
- a Windows NT Service Pack CD-ROM, and
- an HP Kayak Drivers and Utilities CD-ROM.

To find out more about configuring HP Fast*RAID*, refer to "Configuring HP FastRAID" on page 4.

HP Fast*RAID* Accessory Kit

The HP Fast*RAID* Accessory Kit provides the components necessary to implement Fast*RAID* on suitably equipped PCs or PC Workstations. The HP Fast*RAID* accessory kit includes the following components:

- an Adaptec®ARO-1130 PCI RAID*port*TM adapter,
- CI/OTM Array Management software (3 HP RAID Device Manager diskettes),
- an ArrayConfig utility diskette, and
- an Array 1000 Family manager drivers diskette

You will also need the Windows NT installation CD-ROM & Setup diskettes, and the Windows NT Service Pack CD-ROM that came with your XU or XW PC Workstation.

To find out how to install and configure HP Fast*RAID,* refer to "Installing HP FastRAID" on page 3, and "Configuring HP FastRAID" on page 4.

NOTE

The HP Fast*RAID* Accessory Kit is intended for use only with HP Kayak XU and XW PC Workstations equipped with a RAID*port* connector running Windows NT 4.0.
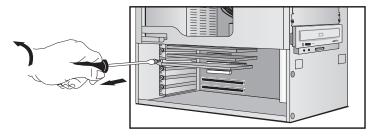
Installing HP Fast*RAID*

To install the Adaptec® ARO-1130 accessory in your PC, follow the step-by-step instructions below.

1   Remove the computer's cover. Refer to the *User's Guide* that came with your PC or PC Workstation, if necessary.

WARNING   For your safety, never remove the computer's cover without first removing the power cord and any connection to a telecommunications network. Always replace the cover before switching on the computer.

2   Locate the RAID*port* slot on the PC Workstation's system board. Refer to the *User's Guide* that came with your PC or PC Workstation, if necessary.

3   Unscrew and remove the slot cover. If the slot cover is hard to remove, loosen the screws on the adjacent slots.

4   Hold the adapter board horizontally by its "top" edge. Slide it into the board guide of the RAID*port* socket. Do *not* bend the board.

5   Align the board's connector with the slot's socket. Firmly press the board into the socket. Make sure that the board's connector is fully seated in the socket and does not touch components on other boards.

Your PC, and the location of its accessory board slots, may be different to the one shown here.

6   Secure the board by replacing the slot cover screw. If you loosened the screws on adjacent slots, tighten them.

7   Replace the cover and connect all cables and power cords.

Configuring HP Fast*RAID*

You can configure HP Fast*RAID* to:

- Create a new array, and
- Manage existing arrays on your system's hard disk drives.

Before you create a new array, you may need to do the following:

1 Create an Array*Config* bootable utility diskette from the HP Kayak XU/XW PC Workstation Drivers and Utilities CD-ROM.

   a Insert the Drivers and Utilities CD-ROM into the CD-ROM drive and a blank, formatted diskette into the floppy disk drive.

   b Use Explorer to locate either the `\FASTRAID\ARCONFIG\` or the `\FASTRAID\ArcfgDRV\` directory on the Drivers and Utilities CD-ROM.

   c Double click on the file `DISKIMG.BAT.`
   The Array*Config* bootable utility diskette has been created.

2 Create an Array 1000 Family driver diskette from the HP Kayak XU/XW PC Workstation Drivers and Utilities CD-ROM.

   a Insert the Drivers and Utilities CD-ROM into the CD-ROM drive and a blank, formatted diskette into the floppy disk drive.

   b Use Explorer to locate the `\FASTRAID\DRIVERS\` directory on the Drivers and Utilities CD-ROM.

   c Copy all the files and subdirectories in this directory to drive `A:\`.

   Ensure that the files `DISK1` and `TXTSETUP.OEM,` and the directory `\WINNT` containing the files `CDA1000.SYS` and `OEMSETUP.INF,` have been successfully copied.
   The Array 1000 Family driver diskette has been created.

1   Back up any existing data that you wish to save on your hard disk drives. Once the drives have been configured and the operating system re-installed, you can restore your backed up data.

2   Disable or remove any non-SCSI disks on your computer before running the Array*Config* utility, or ensure that the Array 1000 adapter is set to the highest priority in the Setup program (**Boot>Boot Order**).

3   Some HP Fast*RAID* configurations require two hard drives. If you need to install an additional drive, we strongly recommend that you select an drive that matches the original drive in both capacity and performance (consult an authorized HP dealer for the appropriate HP accessory drive). HP does not provide support for this accessory when used with drives other than HP accessory drives.

4   Make sure that when you install a new drive, you assign the drive a unique SCSI ID. This can be checked through the SCSI*Select* Utility by selecting **SCSI Disk Utilities**.

Creating a New Array

You can create a new array using either of the following options.

Express Setup - use this if you want to create an array (up to two drives) quickly and easily. Array*Config* asks you a few simple questions and uses your answers to create the kind of array that best meets your needs. This process is similar to the "Wizards" used in many applications. You do not need to know the technical details of how arrays are configured. Refer to "Using Express Setup" on page 6.

Custom Setup - this option allows advanced users to create arrays (with more than two drives) with customized configurations. You will need to know more technical details about how arrays are configured to benefit from this option. Refer to "Using Custom Setup" on page 11.

Using Express Setup

To create an array using Express Setup, you will need to do the following:

1 Select the Array*Config* menu option by pressing the hot key — the letter that appears in a different color. (The hot key letters are underlined in the following instructions). You can also press the ↑ and ↓ keys until the option is highlighted and then press ⏎.

2 Insert the Array*Config* utility disk in drive A and reboot your computer. The Array*Config* utility will start automatically.

3 Read the text that appears on the initial Array*Config* screens. Press any key to view the next screen, or press `Esc` to return to the previous screen.

4 When you see the Setup Type Selection Menu, select **Express Setup**.

5 When the next screen appears, select the type of array you want to create:

  • Select **Optimized for Performance** if you want the fastest possible data input and output from the new array. This type of array does not have special data protection features, however.

  • Select **Optimized for Data Protection** if your main concern is to protect the files on the array from disk failure. This type of array safeguards files in the array even if one of the array disks fails. To use this option, two disk drives are required.

6 At the prompt, enter the number of drives to use in the array. You can create either a one- or two-drive array with the Express Setup.

NOTE When you select a single hard drive for RAID 0, the drive will be striped and optimized using the ARO-1130's cache memory, but no actual array will be created. A single drive optimized in this way, although significantly faster, will not provide the same level of performance as a two-drive RAID 0 array.

7   When the next menu appears, select the type of application that you will run on your computer. (Select **Other Applications** if you are not sure what type of application you will use.) Array*Config* will use your answer to create the best array configuration for your applications.

8   When the next menu appears, select a boot order for the new array.

   • Select **Disk Array will be Boot Drive** if you want your computer to boot from the new array. If you selected **Optimized for Data Protection** in Step 4, booting from an array safeguards the information on your boot drive.

   • Select **Disk Array will not be a Boot Drive** if you do not want your computer to boot from the new array. (If you only have one array, it will automatically be the boot drive.)

9   When you have finished all these menu selections, wait while Array*Config* creates the array. This may take up to 30 minutes, especially if the disk drives are large.

   A message appears when the array has been created. An error message appears if the Array*Config* encounters some problems (for example, an array already exits). If this happens, run Array*Config* again and use the Custom Setup option.

10 Press ⎋ (Esc) until you're back at the Main Menu, and exit Array*Config*.

Installing Windows NT 4.0

11 Insert the Windows NT setup disk #1 and restart your PC Workstation.

NOTE

Do not boot from the Windows NT CD-ROM as the hard drive will not be detected.

12 When prompted, insert Windows NT Setup Disk 2 and press ⏎.

13 From the Welcome to Setup screen, press ⏎ to continue installing Windows NT.

14 Press ⏎ to have Setup detect the mass storage devices on your computer.

15 At the prompt, insert Setup Disk 3 and press ⏎.

16 When the Setup program has finished detecting storage devices, press **s** to configure additional SCSI adapters.

17 From the list of adapters, select **Other** and press ⏎ to install a custom driver.

18 Insert the Adaptec Array1000 driver diskette in drive A and press ⏎ .

19 Press ⏎ to select the Adaptec Array1000 driver.

20 When the driver has finished loading, press ⏎ to continue installing Windows NT.

21 At the prompt, re-insert Setup Disk 3 and press ⏎ .

22 Continue installing Windows NT following the on-screen instructions.

23 When prompted, insert your drivers diskette into drive A and press ⏎ . When the driver has finished loading, you can continue with the Windows NT installation. For more information, refer to your operating system's documentation on your Drivers and Utilities CD-ROM.

Installing the HP RAID Device Manager

After installing Windows NT 4.0 on your computer, continue by installing the HP RAID Device Manager. You can use the HP RAID Device Manager to provide configuration and performance information, and to change array settings. For instructions on using the HP RAID Device Manager, refer to the HP RAID Device Manager's online Help.

To install the HP RAID Device Manager:

1   Start Windows NT and either,

   • insert the HP RAID Device Manager Disk 1 in drive A, or
   • the Drivers and Utilities CD-ROM in the CD-ROM drive.

2   To continue the installation, either:

   • Select **Run** from the **Start** menu, type **A:\setup.exe** and press
     ⌐⌐⌐⌐⌐⌐⌐, or
   • Use Explorer to find the **\FASTRAID\CIO\DISK1** directory on
     the CD-ROM and double-click on **setup.exe**.

3   Follow the instructions that appear on the screen.

4   When the installation is complete, reboot your computer. From the
    Start menu, select **HP RAID Device Manager** to display the HP RAID
    Device Manager tools. Select **RAID Device Manager** to start the program.

The HP RAID Device Manager (the title bar displays "Adaptec CI/O Workstation Array Management Software") monitors the configuration and performance of your HP FastRAID system.

Be sure to install any other device drivers required by your system configuration, including those from the Windows NT 4.0 Service Pack. For more information, refer to the Windows NT installation notes available from the HP's World Wide Web support site:

   http://www.hp.com/go/kayaksupport/

You can also find more information on the HP Kayak XU/XW PC Workstation Drivers and Utilities CD-ROM provided with your system in the **!INSTALL** directory.

Optimizing Performance

Check HP's World Wide Web site for more information on how to optimize the performance of HP Fast*RAID* on your system. Refer to **http://www.hp.com/go/kayaksupport/**.

To change HP Fast*RAID* settings:

• Click the **Start** button, select **Programs**, then **HP RAID Device Manager**, then **RAID Device Manager**. To modify the caching parameters, you must set a password. In the HP RAID Device Manager window, select the **View** menu, then **Change Password**.

You can install the HP RAID Device Manager from the Drivers and Utilities CD-ROM or the HP Web site.

The first time you use the HP RAID Device Manager, no password is set. When requested to enter the Old Password, press **TAB** to go to the New Password box.

1 In the Storage Configuration window, select the *RAID* icon.

2 In the window that appears, select **Operations…**, and then **Optimize Performance.**

   If an Adaptec® software window appears click **Cancel.**

3 In the Optimize Performance window, ensure that **Caching Enabled** is checked.

4 Click on the dropdown menu and select the type of application nearest to the one you are using.

   If you want to change the values already set, select **Edit** and perform the changes required.

Using Custom Setup

To create an array using Custom Setup, you will need to do the following:

You can also perform most of these advanced options with the HP RAID Device Manager once you've completed the installation and the HP RAID Device Manager has been installed. Refer to the HP RAID Device Manager's online Help for more information on using this utility.

1   Insert the Array*Config* diskette in drive A and reboot your computer. Wait until Array*Config* starts automatically.

2   Read the text that appears on the initial Array*Config* screens. Press any key to view the next screen, or press ⌈Esc⌉ to return to the previous screen.

3   When you see the Setup Type Selection Menu, select **Custom Setup**. Then wait while Array*Config* scans your system for information about your host adapter and SCSI devices.

4   When the Main Menu appears, select **Disk Array Operations**.

5   Select **Create New Array** from the Disk Array Operations menu.

6   Type a name for the array and press ⌈↵   ⌉. The name can be up to 15 characters long and can include spaces and any other printable characters.

7   Select an array type from the following options:

   - RAID 0: Data is striped across the disks in a RAID 0 array, allowing for faster data input and output than a single disk. RAID 0 arrays do not store redundant data; if any disk in the array fails, all data is lost.

   - RAID 1: Data is mirrored on one pair of disks. If one disk fails, data is still safe. The actual usable data capacity of the array equals half the available disk space.

8 Type the number of drives you want in the array, not including spare drives, and press ⏎. The number of drives available for assignment is listed on the screen. (You will not be prompted for the number of drives if you are creating a RAID 1 array, because RAID 1 arrays have two drives by definition.)

NOTE   When you select a single hard drive for RAID 0, the drive will be striped and optimized using the ARO-1130's cache memory, but no actual array will be created. A single drive optimized in this way, although significantly faster, will not provide the same level of performance as a two-drive RAID 0 array.

9 When the next screen appears, press ⭾ to highlight a channel. Select drives for the array by pressing the ↑ and ↓ keys until the drive name is highlighted, and then press **Ins** or ⏎. The names of selected drives appear in the box on the right side of the screen. To select drives on a different channel (if necessary) press ⭾ to select another channel and then select the drives from the SCSI IDs on Channel menu. To deselect the drive you most recently added, press Delete.

CAUTION   A warning appears if you select a disk that has partitions. Do not select disks with partitions if they contain data you want to keep, because any existing data will be erased when the disk becomes part of the array.

When you have selected the number of drives you specified in Step 8, the next screen appears automatically. If you are creating a RAID 1 array and if there are any unassigned drives, the screen prompts you to define spare drives for the array.

10 If you do not want a spare, type **n** and continue with step 12. If you want to select dedicated spares, follow these steps:

a At the prompt, type **y**.

b At the next prompt, type 1 or 2.

c Select one or two spares, using the same method you used to select disks for the array.

11 When the Initialize Mode menu appears, select **Initialize Array to Zero**. This operation begins immediately. A graph on the screen shows the progress of this operation.

If the drives contain data, all the data is lost when you initialize the array.

Select **Low-Level Format** only if the drives were previously formatted on another system or if you are using drives other than new HP accessory drives (where there's a possibility of surface defects). Low-level formatting takes a long time for large disk drives. (Refer to the section "Initializing an Array" on page 17 for more information.)

12 When the menu of block sizes appears, select a block size. (This menu does not appear for RAID 1 arrays.)

The default block size (64 KBytes) gives the best overall performance. The allowable block sizes are 8, 16, 32, 64, and 128 KBytes.

13 When you see the message **Initialization of [array name]** is complete, press any key to return to the Disk Array Operations menu.

14 To create additional arrays (if disks are available), return to Step 5. When all arrays are created, exit from Array*Config*, remove the Array*Config* diskette, and reboot the computer. After you reboot you can write data to the arrays.

15 Press ⎣Esc⎦ until you're back at the Main Menu, and exit Array*Config*.

16 Begin the installation of Windows NT 4.0 by booting from the Windows NT Setup diskettes.

NOTE   Do not boot from the Windows NT CD-ROM as the hard drive will not be detected.

17 When prompted, insert Windows NT Setup Disk 2 and press ⎣⏎⎦.

18 From the Welcome to Setup screen, press ⎣⏎⎦ to continue installing Windows NT.

19 Press ⏎ to have Setup detect the mass storage devices on your computer.

20 At the prompt, insert Setup Disk 3 and press ⏎.

21 When the Setup program has finished detecting storage devices, press **S** to configure additional SCSI adapters.

22 From the list of adapters, select **Other** and press ⏎ to install a custom driver.

23 Insert the Adaptec Array1000 driver diskette in drive A and press ⏎.

24 Press ⏎ to select the Adaptec Array1000 driver.

25 When the driver has finished loading, press ⏎ to continue installing Windows NT.

26 At the prompt, re-insert Setup Disk 3 and press ⏎.

27 Continue installing Windows NT following the on-screen instructions.

28 When prompted, insert your drivers diskette into drive A and press ⏎. When the driver has finished loading, you can continue with the Windows NT installation. For more information, refer to your operating system's documentation on your Drivers and Utilities CD-ROM.

Managing an Existing Array

You can manage an existing array in the following ways:

- Making a bootable array

- Displaying array information

- Deleting an array

- Initializing an array

- Adding or deleting a spare disks

Making the Array Bootable

Follow these steps if you want your computer to boot from the newly created array or if you want to change the boot order of existing arrays:

1 Select **Display Boot Order** from the Main Menu. The Boot Order for Singles and Arrays window appears.

2 If the newly created array is listed as Unit 0 at the top of the list, no changes are necessary; if it has some other unit number, highlight the array name and press ⏎ to select it.

3 Use the arrow keys to move the selected array to the top of the list. Then press ⏎ to deselect it.

4 When you are finished, press Esc to return to the Main Menu.

NOTE You cannot use this procedure to change the boot order of a non-striped SCSI disk drive (see the "Resolving Problems" on page 20 for notes on booting from the Narrow SCSI BIOS). If you want to do this, create a one-drive RAID 0 "array" from the disk.

Displaying Array Information

Follow these steps to display information about existing arrays defined in your computer:

1 Select **Disk Array Operations** from the Custom Setup Main Menu.

2 Select **Display Arrays** from the Disk Array Operations menu.

3 When the list of arrays appears, highlight the array for which you want information and press ⏎.

4 View the information that appears on the screen. This includes array type and status, array size, and information about each disk in the array.

5 Press any key to return to the Disk Array Operations menu.

Deleting an Array

CAUTION All data is lost when you delete an array! Before you delete an array, back up any data you want to keep.

Follow these steps to delete an array:

1 Select Disk Array Operations from the Main Menu.

2 Select **Delete Array** from the Disk Array Operations menu.

3 When the list of arrays appears, select the array you want to delete.

CAUTION   A warning appears if you select an array that has partitions. Do not delete an array with partitions if it contains data you want to keep, because any existing data will be erased. Be especially careful not to select your boot array!

4 View information about the array and make sure you really want to delete it. Press any key to continue.

5 Type **y** to delete the array (or **n** to cancel the operation).

6 When the message **[Array name] deleted** appears, press any key to continue.

The drives that were formerly part of the array can now be used as stand-alone drives or as members of another array. Deleting an array may change the boot order and the drive assignment of other arrays and disks.

NOTE   You can identify individual drives by blinking the drive lights while you are running the HP RAID Device Manager software. Refer to the HP RAID Device Manager Software online documentation for more information.

Initializing an Array

When you create a new array in Custom Setup, you are automatically prompted to initialize (format) it. You can also select the Format/Initialize Array option as a separate Custom Setup command. This could be necessary to re-initialize an array that has become corrupted. Here is some additional information on the two initialization methods:

- **Initialize Array to Zero**: (Recommended method) Fills the array with zeroes. This option is faster than a low-level format, but it does not verify the integrity of the disks.

- **Low-level Format**: Performs a low-level SCSI format. This writes a consistent pattern to the disks, checks the disks for defects, and fills the array with zeroes. Low-level formatting can take some time (up to 1 hour) if the disks are large. You cannot abort a low-level format once it has started.

CAUTION   Formatting or initializing an array erases all data on the array and cannot be aborted once it has started. If the array contains data you want to keep, be sure to back it up first!

Follow these steps to initialize an array:

1 Select **Disk Array Operations** from the Main Menu.

2 Select **Format/Initialize Array** from the Disk Array Operations menu.

3 When the list of arrays appears, select the array you want to initialize.

4 Type **y** to confirm that you want to format the array.

CAUTION   A warning appears if you select an array that has partitions. Do not initialize an array with partitions if it contains data you want to keep, because any existing data will be erased. Be especially careful not to initialize your boot array!

5 When the Select Format Mode menu appears, select **Initialize Array to Zero** (recommended) or **Low-Level Format**.

6   When the list of block sizes appears, select a block size. The allowable block sizes are 8, 16, 32, 64 (the default), or 128 KBytes. (This menu does not appear if the array is a RAID 1 array with only two drives.) The default block size gives the best overall performance. Formatting begins immediately.

7   When you see the message **Initialization of [array name]** is complete, press any key to return to the Disk Array Operations menu.

Adding and Deleting Spares

Dedicated spare disks (spares) are an important data protection and real-time recovery feature of RAID 1 arrays (RAID 0 arrays do not support spares). Up to two dedicated spares can be defined for each array. If a disk in an array fails while the computer is running, a spare is activated immediately to take its place. The array software automatically reconstructs the necessary data on the new disk, and array operation continues uninterrupted.

Adding a Dedicated Spare.
When you create an array you have the option of adding one or two dedicated spares. You can also add dedicated spares to an existing array at a later time. You cannot add dedicated spares to an array if:

• The array already has two dedicated spares

• The remaining single disks are not at least as large as the smallest disk in the selected array

Follow these steps to add one or two dedicated spares to an already-existing array:

1   Select **Disk Array Operations** from the Main Menu.

2   Select **Add/Delete Spare Drive** from the Disk Array Operations menu.

3   Select the array to which you want to add the dedicated spare.

4   Select **Add Spare Drive** from the Add/Delete Spare menu.

5   Select a SCSI channel on the left, if necessary, and then press → to move to the list of disks on the right. Disks are grayed out if they are already used in an array, or if they are smaller than the members of the array. Highlight an available disk and press ⏎. Then select another disk for the second spare, if necessary. The new dedicated spare is added immediately.

CAUTION   A warning appears if you select a disk that has partitions. Do not select disks with partitions if they contain data you want to keep, because any existing data will be erased. Be especially careful not to select your boot disk as a spare!

6   Press any key to continue.

Deleting a Dedicated Spare.
Follow these steps to delete a dedicated spare:

1   Select **Disk Array Operations** from the Main Menu.

2   Select **Add/Delete Spare Drive** from the Disk Array Operations menu.

3   When the list of spare drives appears, select the one you want to delete and press ⏎.

4   Select **Delete Spare Drive** from the Add/Delete Spare Drive menu. The dedicated spare is deleted immediately.

5   Press any key to continue. The disk that was formerly a dedicated spare can now be used as a spare for another array or as a member of a new array.

Resolving Problems

If you experience problems using the HP Fast*RAID* option, check that:

1   The ARO-1130 adapter BIOS sign-on message appear
    during bootup? If not, check that the ARO-1130 adapter is properly
    seated in the RAID*port* slot.

2   All SCSI bus cables and power cables are connected.

If you are having trouble booting from the Fast*RAID* array:

1   Check the settings in the HP *Setup* program that the Array1000
    Family Raid Adapter is selected in position one. To do this:

    a   From the HP Setup program, select the *Boot* menu group, then
        the *Hard Disk Drive* item. If the Array1000 Family Raid Adapter
        is already in position one, then no changes are necessary.
        Otherwise, select the Array1000 Family Raid Adapter by using
        the up and down arrows, then press the **+** key to move it up the
        list. Save your changes before you exit the *Setup* program.

2   Check that the array has been selected as the boot device using the
    Array*Config* utility:

    a   Insert the Array*Config* utility disk in drive A.

    b   Reboot your computer and when the Array*Config* Main menu
        appears, select **Display Boot Order.** If the array is at the top of the
        list, preceded by the words Unit 0, no changes are necessary.
        Otherwise, highlight the array name and press ⏎, then
        use the arrow keys to move it to the top of the list.

    c   Exit the Array*Config* utility and reboot your computer.

3   Check the HP Setup settings to make sure that each drive has a
    unique SCSI ID.

4 The External 16/8-bit Symbios BIOS and the Fast*RAID* BIOS cannot be loaded at the same time in BIOS setup. The Symbios BIOS should be disabled (from the **Advanced/External and Internal Wide 16/8-bit SCSI** window, disable **Option ROM Scan**). This may be fixed in a later version of the BIOS. Check the World Wide Web at the following site: **http://www.hp.com/go/kayaksupport/** to see if this has been corrected.

Consequence: you cannot boot from devices connected to the Symbios controller at the same time as Wide SCSI devices. It is, however, possible to manually switch from bootable SCSI devices, connected to the Symbios controller, to Wide SCSI devices.

5 Ensure that you boot from the Windows NT diskettes provided and not from the CD-ROM. If you boot from the CD-ROM, the hard drive will not be found (problem relating to Windows NT).

6 Ensure that the Fast*RAID*/Array1000 drivers are installed. To install these drivers:

a Shut down your PC Workstation, remove the ARO-1130 adapter, and restart your system.

b Click the Start menu, point to Settings, and then click Control Panel.

c Double-click the SCSI Adapters icon, then the Drivers tab.

d Click Add, Have Disk…, and insert the Adaptec Array1000 driver diskette.

e When requested to enter the driver path, type **A:\winnt** and follow the installation instructions (the Windows NT 4.0 CD-ROM may be needed).

f Shut down your computer and re-install the Fast*RAID* card.

Frequently Asked Questions

Q: Can I boot from an array?

A: Yes, you can boot without any problem from an array.

Q: If you have two UltraWide SCSI drives connected to the RAID controller, does one of them have to be the bootable drive?

A: No, the entire RAID array is bootable rather than the individual drives that make up the array. If there are two drives configured in a RAID 0 array, the array will automatically be bootable.

Q: *Can a third UltraWide SCSI hard drive be added to be used as the boot device, as defined in the support boundaries*?

A: Yes, you can add a third drive, but the third drive cannot be included in the same RAID array. For example, you could create a RAID 1 array with two drives plus a third drive configured as a spare. Or, you could configure two arrays: one with two drives and one with one drive.

Q: Can I connect a third SCSI drive to the Narrow SCSI controller.

A: You can connect a third drive to the Symbios controller, but both the Symbios BIOS and Fast*RAID* BIOS cannot be loaded at the same time. That means that you cannot boot from both SCSI devices at the same time. If you only need to boot from the Symbios SCSI occasionally, then you can disable (from BIOS setup) the Internal Wide 16-bit SCSI **Option ROM Scan** and enable the Symbios SCSI **Option ROM Scan** to boot on the Symbios SCSI. When you're finished, disable the Symbios SCSI **Option ROM Scan** and enable the Internal Wide 16-bit SCSI **Option ROM Scan**.

NOTE   You cannot change the priority of RAID and non-RAID devices through the Array*Config* utility's Custom Setup routine. RAID devices will always have the highest priority even if the SCSI address of the non-RAID device is set to 0.

The only way to boot on the non-RAID device is to go to the SCSI*Select* Utility, then select Configure/View Interface Settings. Use the arrow keys to select the SCSI Device Configuration, then in the Include in BIOS Scan option, move to the SCSI Device ID to be disabled and press the ⏎ key.

Q: After I installed the FastRAID card, I could not boot Windows NT from my non-striped wide SCSI drive. I get a blue screen with the message "BOOT DEVICE NOT FOUND".

A: Even if the drive is not configured in a RAID array, you can boot on it before installing the Fast*RAID* card provided that the required SCSI drivers are installed.

Technical Information

Technical Specifications

Specification	Description
Advanced RAID features	• RAID coprocessor • Array status monitoring and event notification • Adjustable stripe width
SCSI channels	AIC-7880 system board SCSI chip connected to RAID*port* connector
Array support	1 or 2 10 krpm drives can be configured for RAID levels 0 or 1. Additional drives can also be supported in non-array configurations
Operating system support	Windows NT 4.0

Physical and Environmental Specifications

Specification	Description
Dimensions	7.008 inches in length by 3.58 inches in height 17.8 cm in length by 9.1 cm in height
Operating temperature	5^0C to 55^0C 40^0F to 130^0F
Humidity (operating)	20% to 90%, non condensing

HP Hardware Warranty

This HP accessory is covered by a limited hardware warranty for a period of one year from the date of purchase by the original end-user. The type of service provided is return to an HP or repair-authorized reseller service-center.

At Hewlett-Packard's discretion, a defective accessory will be repaired or replaced by a new unit, either of the same type or of an equivalent model.

If this accessory is purchased and used together with an HP Vectra personal computer or an HP Kayak PC Workstation, it will be covered by the warranty of this computer or workstation, under the same conditions of service and duration.

Please refer to the warranty statement provided with your HP personal computer or PC Workstation for warranty limitations, customer responsibilities, and other terms and conditions.

FOR CONSUMER TRANSACTIONS IN AUSTRALIA AND NEW ZEALAND: THE WARRANTY TERMS CONTAINED IN THIS STATEMENT, EXCEPT TO THE EXTENT LAWFULLY PERMITTED, DO NOT EXCLUDE, RESTRICT OR MODIFY AND ARE IN ADDITION TO THE MANDATORY STATUTORY RIGHTS APPLICABLE TO THE SALE OF THIS PRODUCT TO YOU.

Regulatory

FCC (for USA only)

Federal Communications Commission Radio Frequency Interference Statement
Warning:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures:
• reorient or relocate the receiving antenna
• increase the separation between the equipment and the receiver
• connect the equipment into an outlet on a circuit different from that to which the receiver is connected
• consult the dealer or an experienced radio/TV technician for help.
Hewlett-Packard's FCC Compliance Tests were conducted with HP-supported peripheral devices and HP shielded cables, such as those you receive with your system. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment.

Notice for Canada

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la Class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Notice for Japan (class B)

この装置は，情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づく クラスＢ情報技術装置です。この装置は，家庭環境で使用することを目的としていますが，この装置がラジオやテレビジョン受信機に近接して使用されると，受信障害を引き起こすことがあります。
　取り扱い説明書に従って正しい取り扱いをして下さい。

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